

Exercise 1 Perpendicular lines

Callout. Remember that two lines in the plane are perpendicular if they intersect at a right-angle, of 90° . Any vertical line is perpendicular to any horizontal line. Two non-vertical lines are perpendicular if and only if their slopes multiply to -1 . That is, if the slope of the first line m_1 and the slope of the second line m_2 have $m_1 m_2 = -1$.

- (a) Suppose a line has equation $y = 3x + 4$. An equation of the line perpendicular to this line, with y -intercept at $(0, -2)$ is given in slope-intercept form by $y = \boxed{-1/3}x + \boxed{-2}$.
 - (b) Suppose a line has equation $x = -2$. An equation of the line perpendicular to this, which passes through the point $(4, 2)$ has equation $y = \boxed{2}$.
 - (c) Suppose a line has equation $5x + 2y = -4$. An equation of the line perpendicular to this, which passes through the point $(2, -3)$ is given in point-slope form by $y - \boxed{-3} = \boxed{2/5}(x - \boxed{2})$.
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